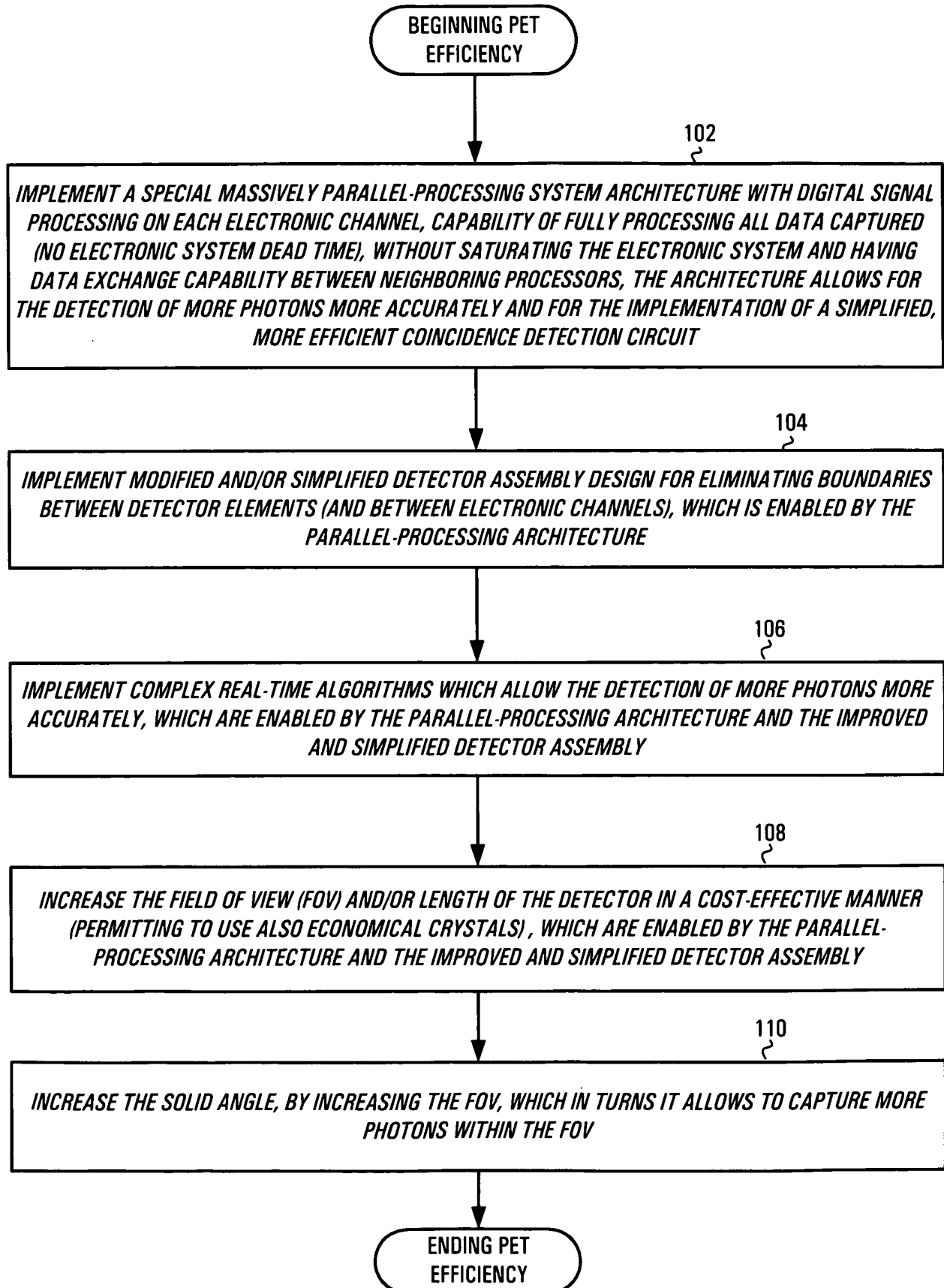


# FIG. 1



# PRIOR ART PET with SHORT FOV

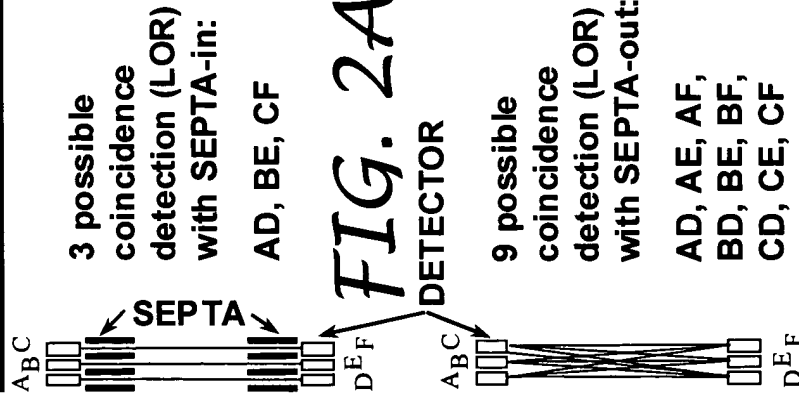


FIG. 2A

DETECTOR

# INCREASING THE FOV

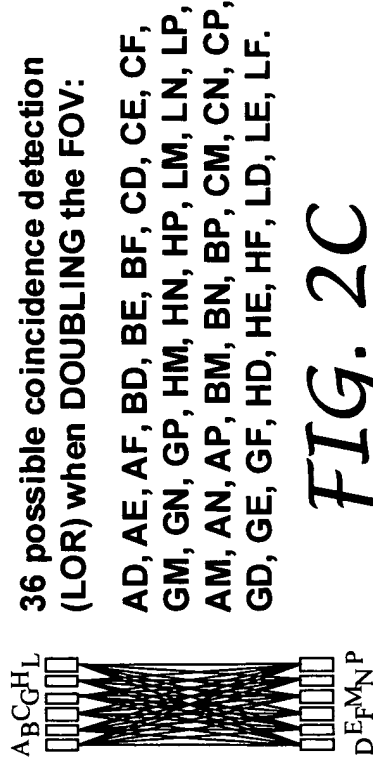


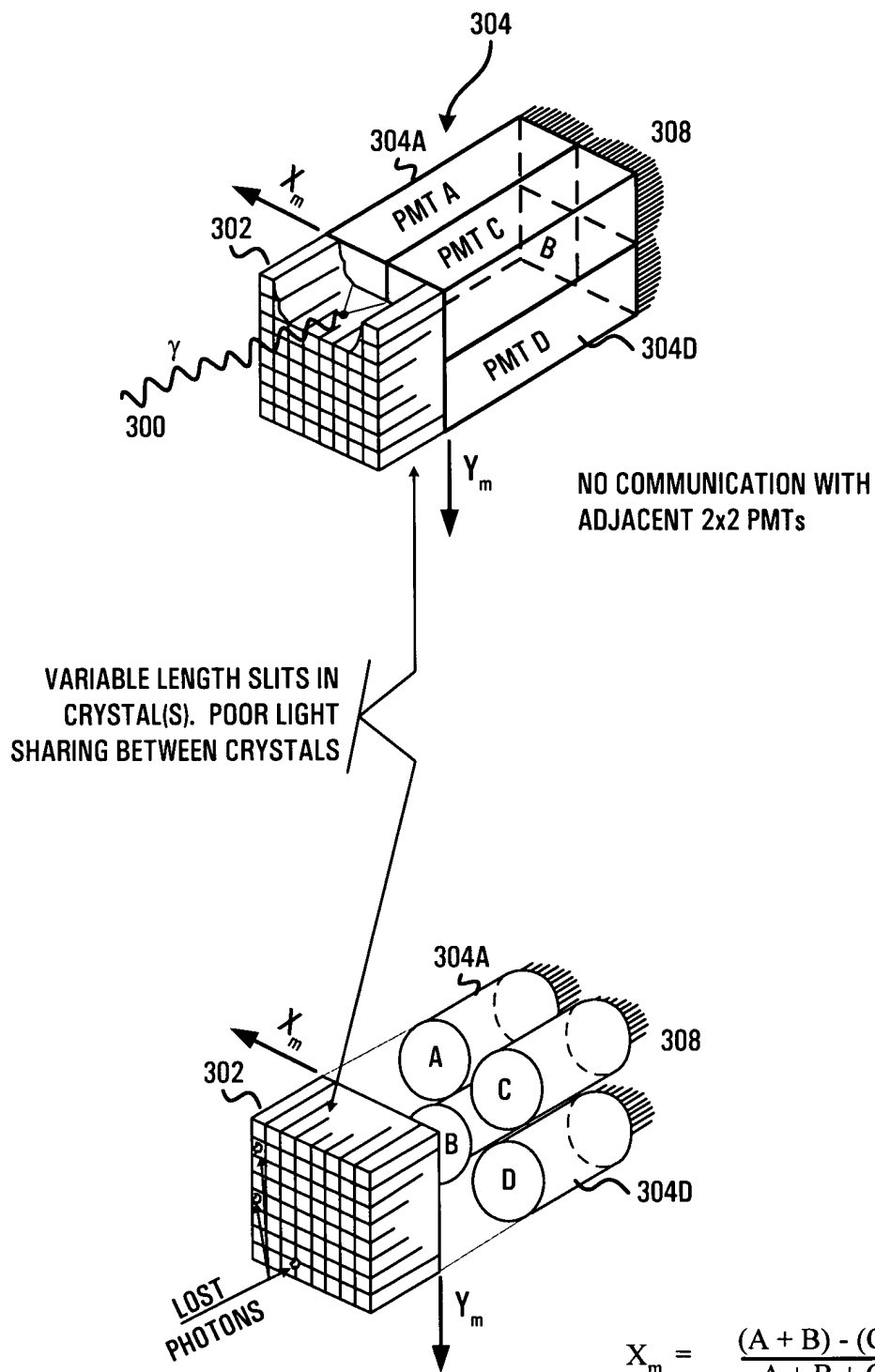
FIG. 2C

81 possible coincidence detection (LOR) when the FOV is three times in length.

The 3D-CBS, with over 1 meter FOV, has the capability to capture in 3-D hundreds of times the number of LORs that can capture the current PET when is used in 2-D mode. The limit for each location of the body is about  $\pm 45^\circ$  the angle with a ring (or  $\text{TOF}_1 - \text{TOF}_2 < \text{time window}$ )

FIG. 2B

FIG. 2D



SMALL CRYSTAL OPTICALLY  
COUPLED TO FOUR PMTs

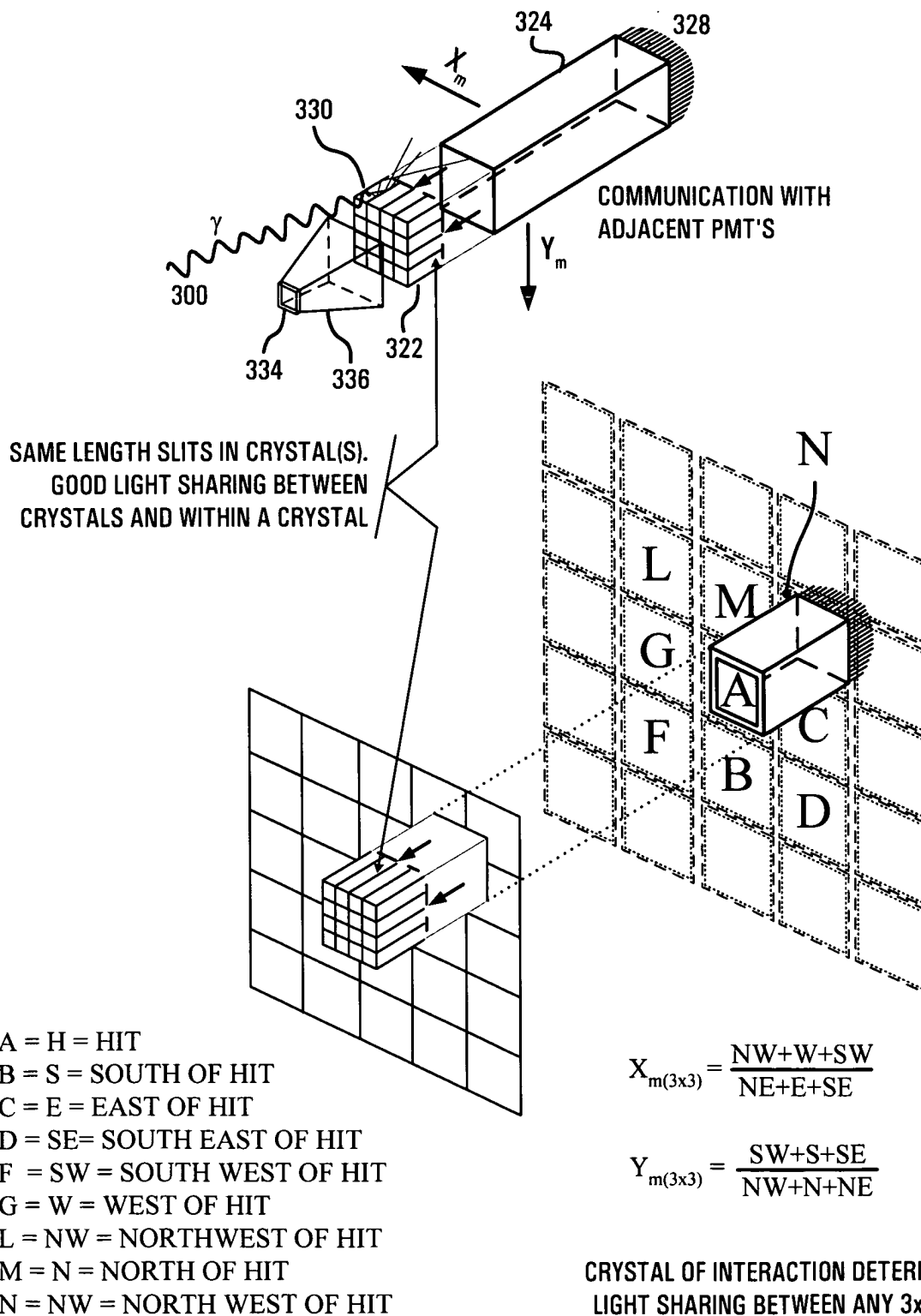
CRYSTAL OF INTERACTION  
DETERMINED BY LIGHT  
SHARING BETWEEN 2X2 PMTs

$$X_m = \frac{(A + B) - (C + D)}{A + B + C + D}$$

$$Y_m = \frac{(B + D) - (A + C)}{A + B + C + D}$$

**FIG. 3A**

PRIOR ART



**FIG. 3B**

FIG. 4A

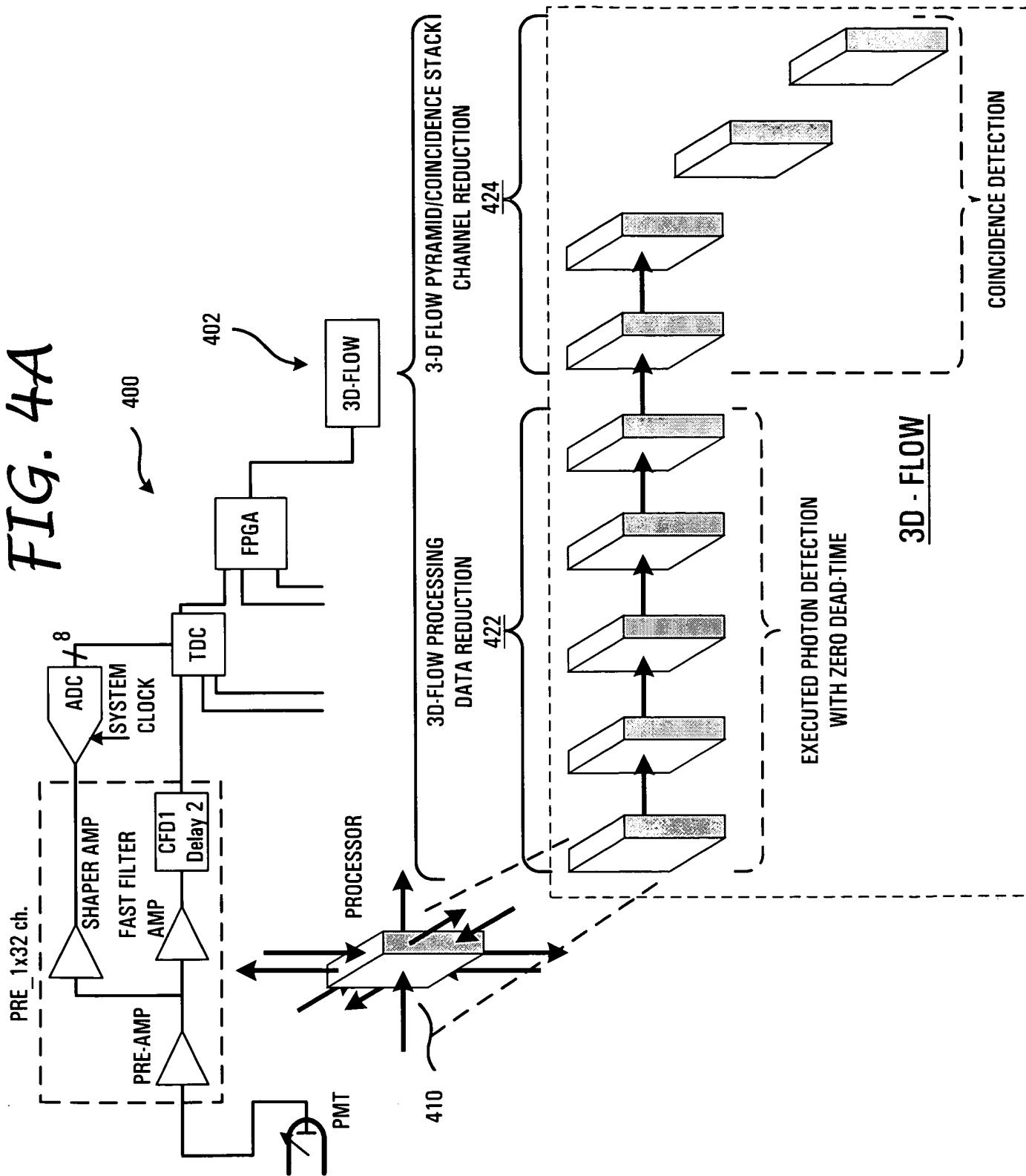


FIG. 4C

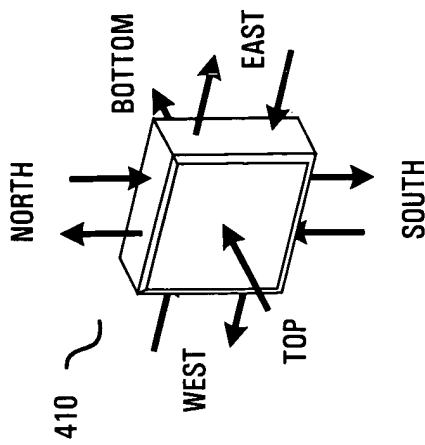
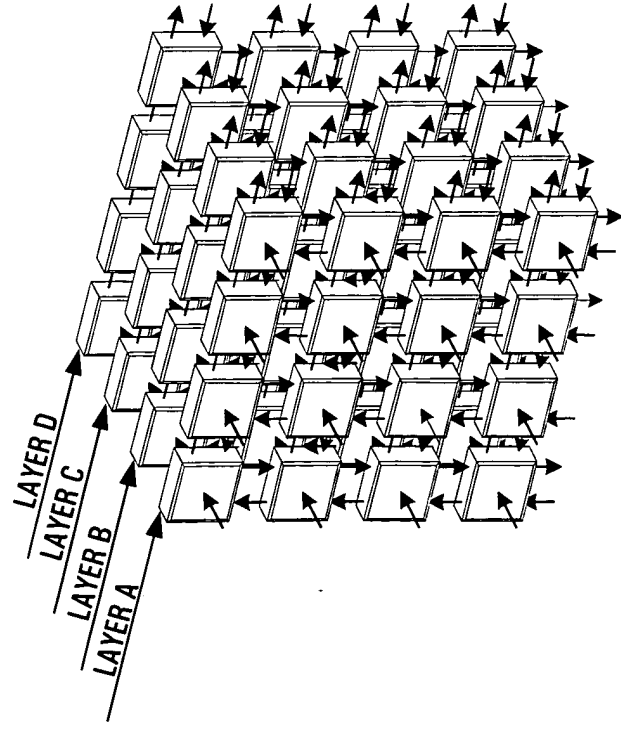


FIG. 4B

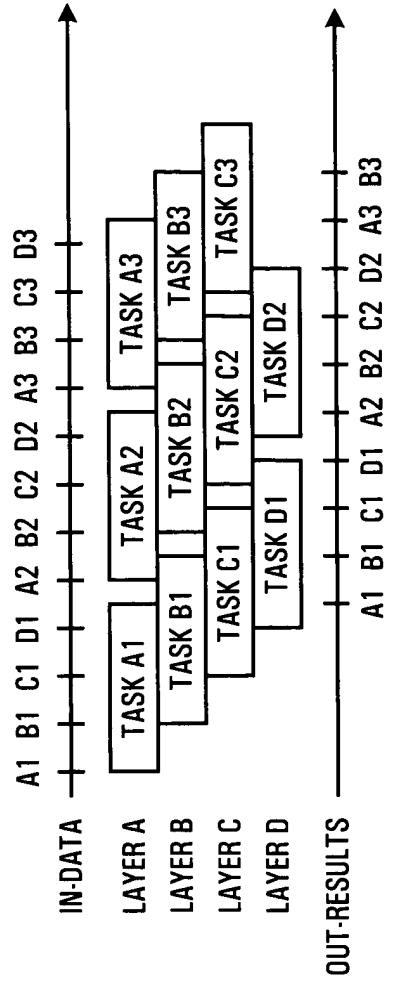
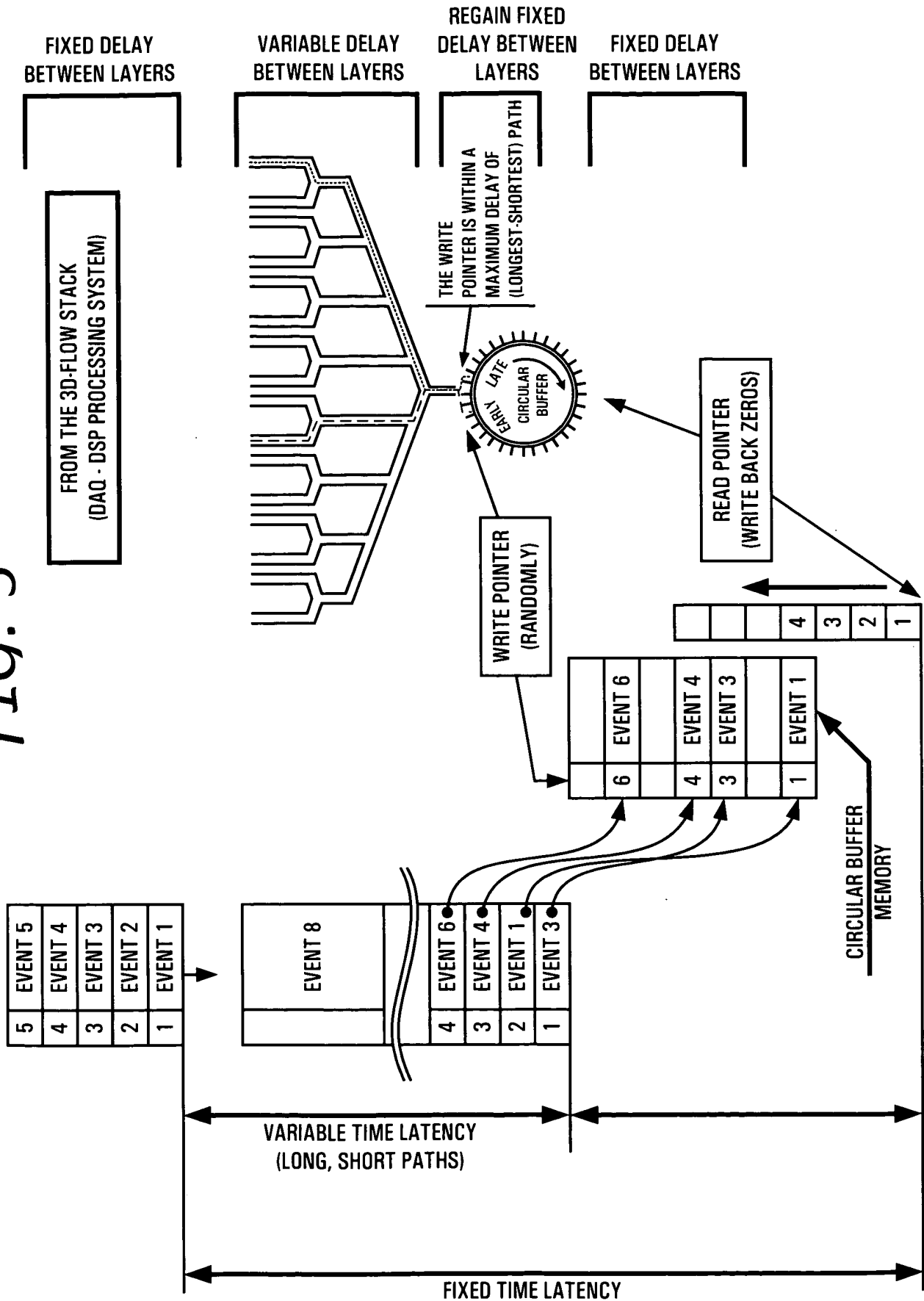
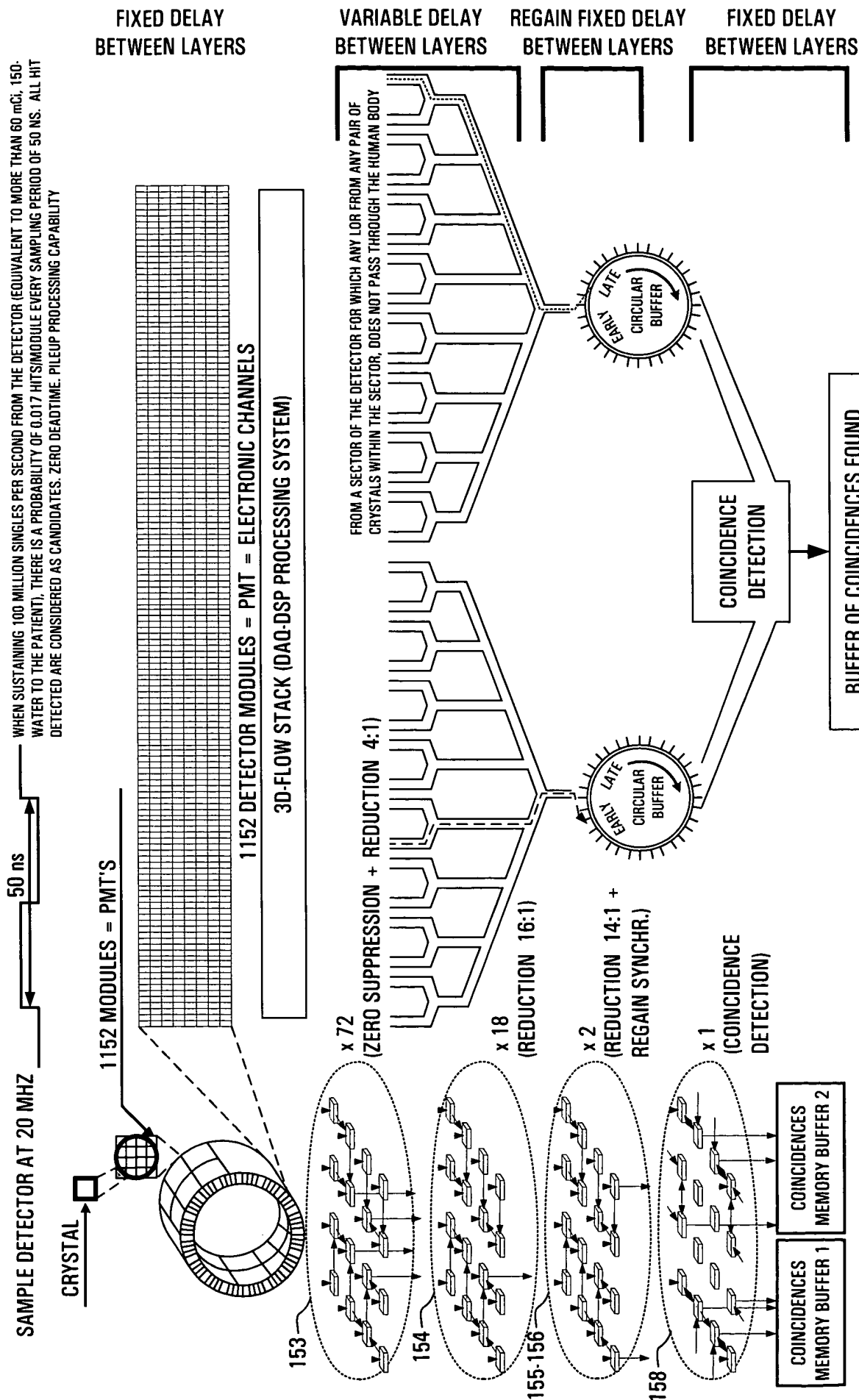


FIG. 4D

FIG. 5



# FIG. 6



NOT ALL LOR ARE CHECKED EVERY SAMPLE PERIOD AS IT WAS IN PREVIOUS PET DESIGNS (WHEN ABOUT 700 COMPARISONS WERE EXECUTED), ONLY THE CANDIDATES FOR A COINCIDENCE ARE COMPARED (6 COMPARISONS).



FIG. 7

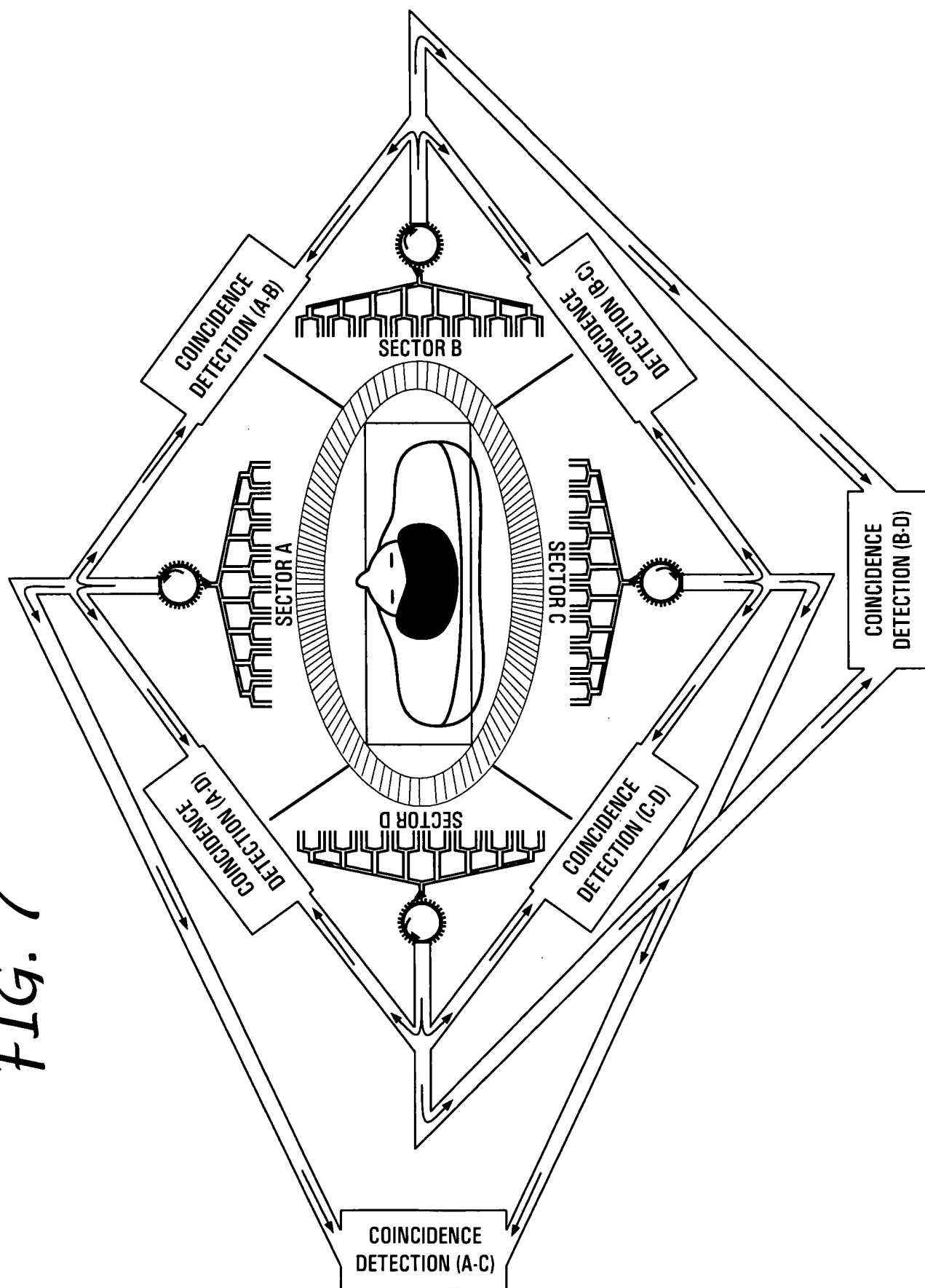
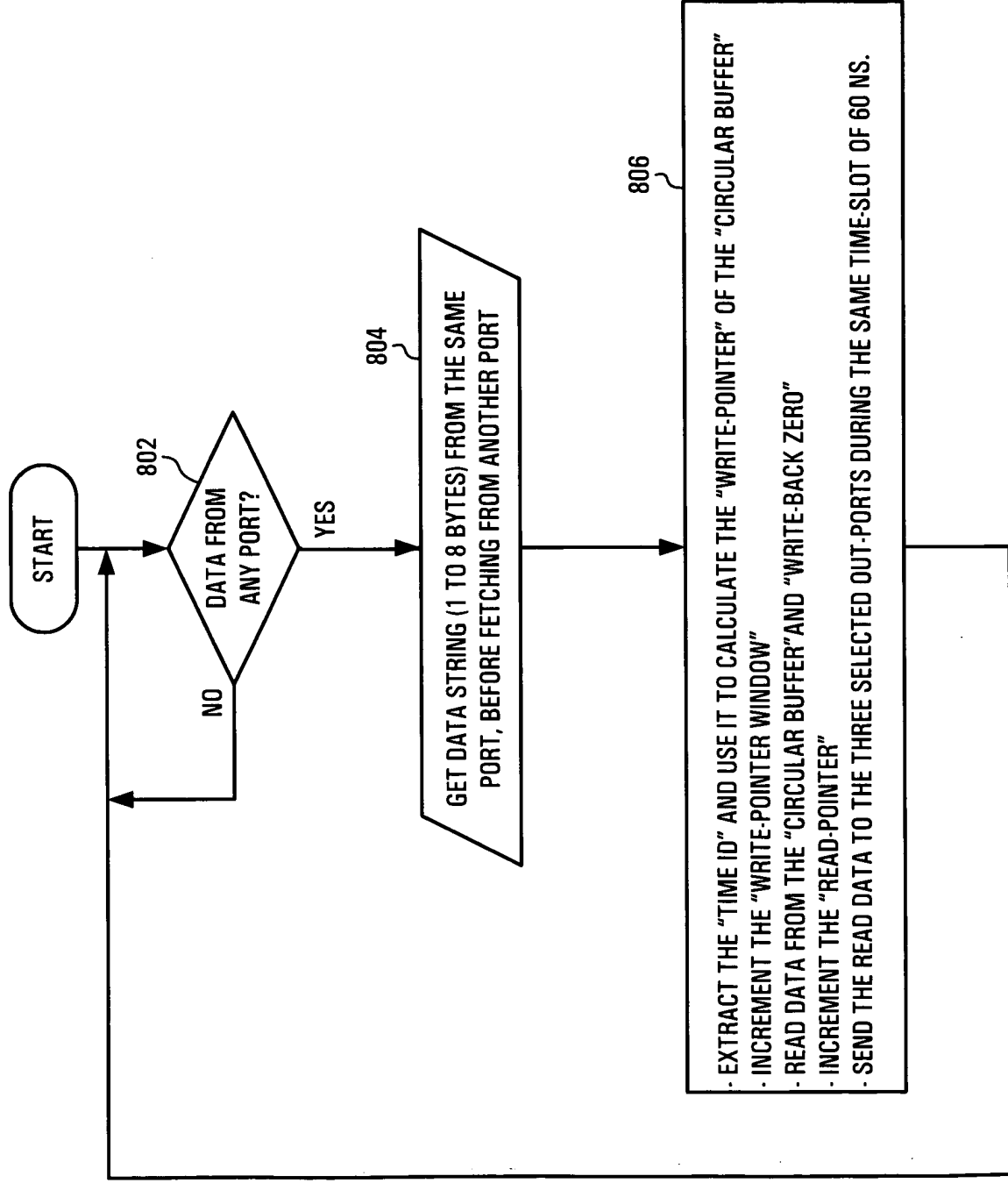
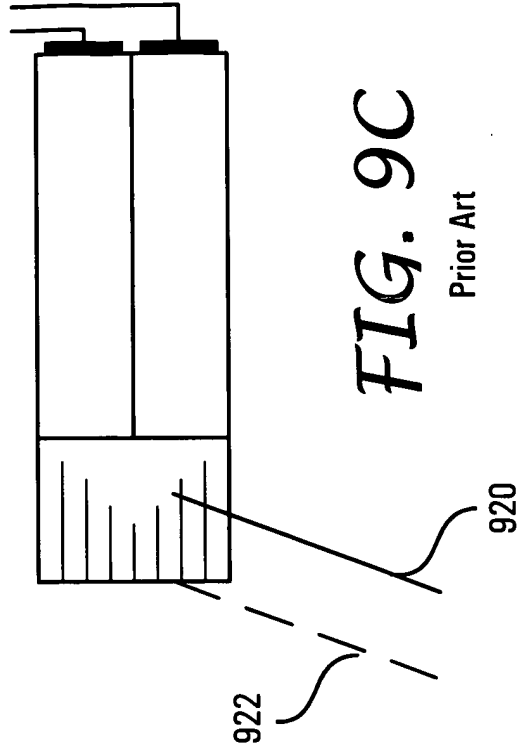
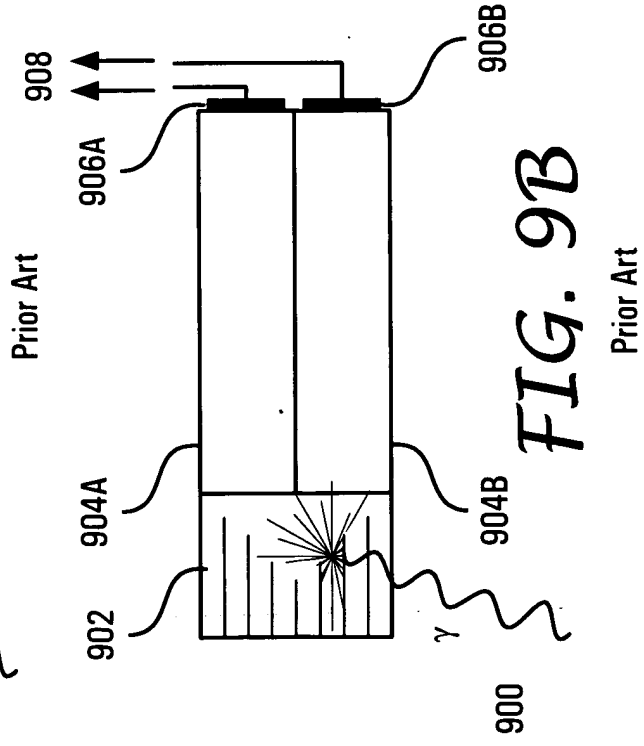
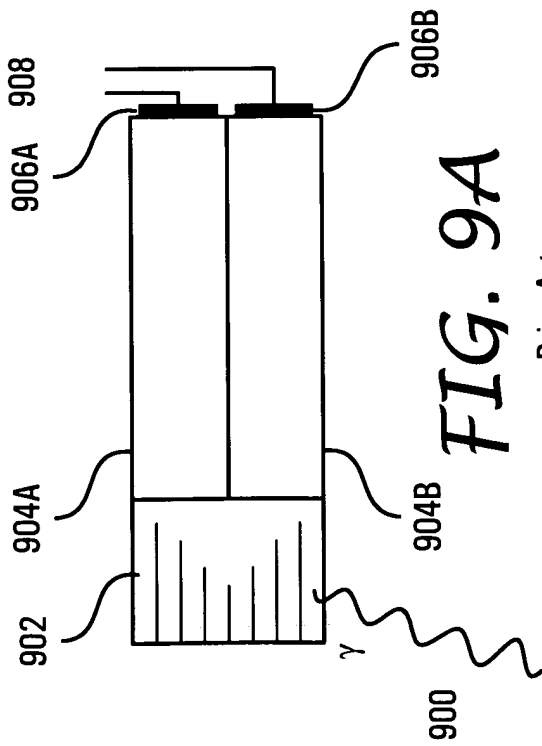


FIG. 8





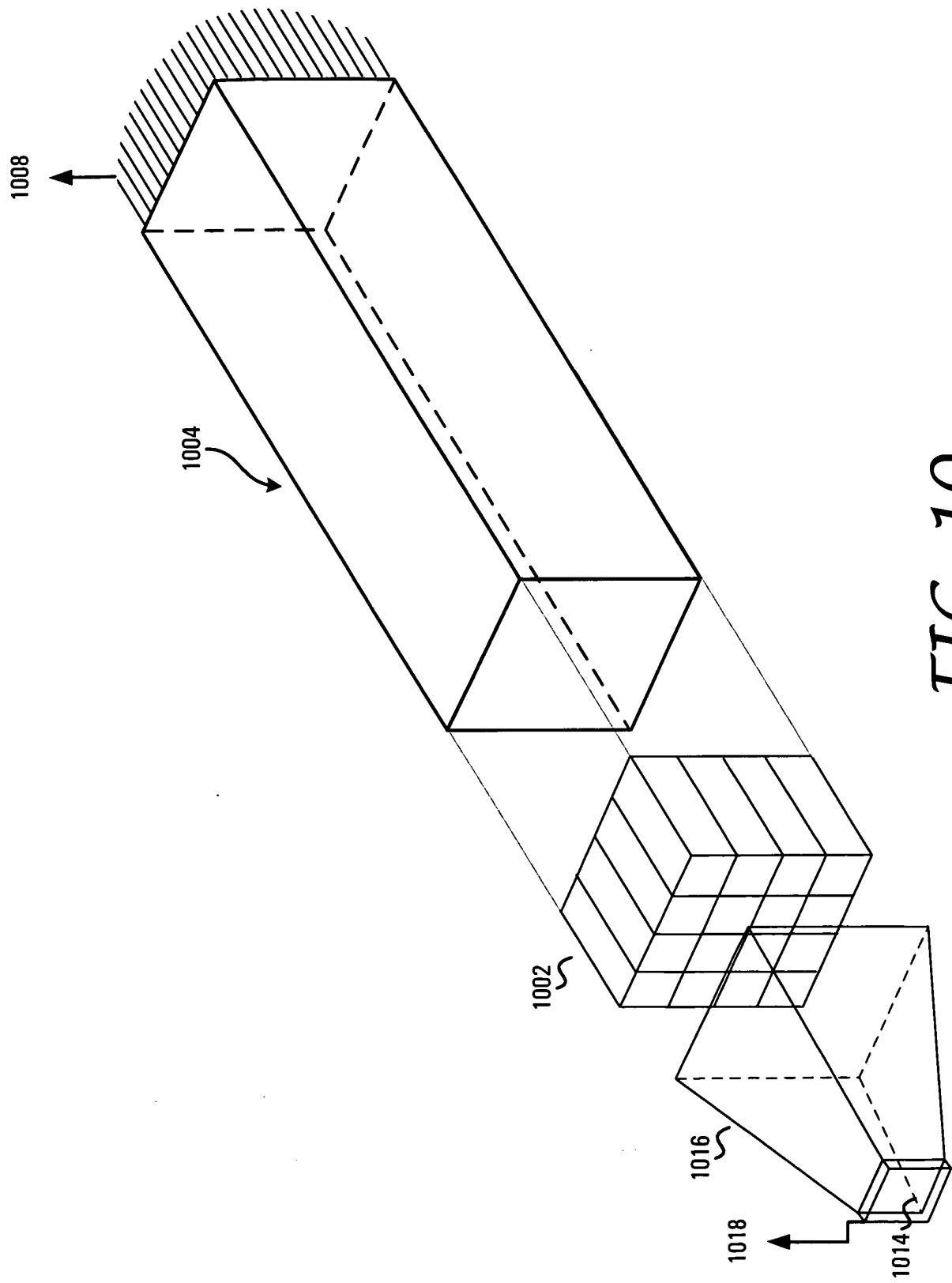


FIG. 10

